FETC SUCCESS
U.S. Department of Energy
Federal Energy Technology Center

CLEAN AFFORDABLE POWER

- [x] fossil energy
- [ ] environmental
- [ ] energy efficiency
- [ ] other

M99000296 P6.5

Tomorrow's Scrubbers

States Impacted:
Georgia, Indiana, New York

Benefit Areas:
Environment, Lower Cost of Electricity, Energy Security

Participants:
New York State Electric & Gas Corp.; Northern Indiana Public Service Company (NIPSCO); Pure Air on the Lake, L.P.; Southern Company Services, Inc.

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Description

The first utility in the United States to meet the 1990 Clean Air Act standards for sulfur dioxide (SO_2) control did so using an advanced technology supported by the Department's Clean Coal Technology (CCT) Demonstration Program. Northern Indiana Public Service Company (NIPSCO) installed an advanced scrubber, developed by Pure Air, at its Bailly generating station near Chicago in 1992. It is a comparatively smaller scrubber, requiring less material to construct, and therefore, costs nearly one-half less than previous scrubbers. The NIPSCO project was designated one of the nation's eight top "Outstanding Engineering Achievements" in 1992 by the National Society of Professional Engineers, and also earned *Power* magazine's "Powerplant of the Year" award, in 1993.

Another award-winning CCT project is Southern Company Services' CT-121 100 MWe scrubber, located at Georgia Power Company's Plant Yates in Newnan, GA. Starting in late 1992, that project demonstrated a novel jet bubbling reactor design that can achieve simultaneous removal of SO_2 and particulate emissions. The CT-121 project won four national and regional awards, including *Power's* "Powerplant of the Year Award" in 1994.

New York State Electric & Gas Corp.'s (NYSE&G) S-H-U scrubber near Ithaca, NY, at its Milliken Station, is sized at 300 MWe and has a two-stage split absorber design. The scrubber, which began operating in 1995, is integrated with low-NO_x burners and micronized coal reburning for nitrogen oxides (NO_x) emission control and heat pipes for thermal efficiency improvement. As with the Pure Air scrubber, a high quality gypsum by-product is made, in lieu of waste sludge.

Goals

To develop technology that could control the amount of sulfur dioxide emitted from coal-fired power plants, based on the requirements of the Clean Air Act Amendments of 1990.

Tangible Benefits

National: Scrubbers demonstrated under the CCT Program (Pure Air/Bailly, CT-121/Yates, and S-H-U/Milliken) have a number of advanced features that are being adopted as the specification norms for electric utility scrubbers in the United States. These features are saving U.S. electricity consumers billions of dollars in reduced environmental compliance costs, helping to preserve low-cost coal-fired electricity as an environmentally friendly energy option.

Regional/Local: In one year, the Pure Air scrubber at NIPSCO's Bailly station was able to eliminate over 70,000 tons of SO_2 emissions, turning an air pollutant into enough wallboard to construct 32,500 new homes. In addition, the scrubber facility employs between 25 and 30 people, while the availability of low-cost by-product gypsum in lieu of imported rock gypsum has allowed U.S. Gypsum to continue operating its aging East Chicago wallboard factory, thereby preserving about 200 jobs. Similar benefits have accrued from the CT-121 and S-H-U scrubbers, albeit at a smaller project scale. It is also noteworthy that these projects are sited in environmentally sensitive areas.

March 1999